VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9VAC25-260. Pactiv, LLC manufactures polyvinyl chloride, nylon, and polyethylene plastic film from synthetic resins. The discharge results from the treatment of sanitary and process wastewaters. In addition, noncontact cooling water and stormwater is discharged. This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
   Pactiv, LLC
   149 Grand Caverns Drive
   Grottoes, Virginia 24441
   Location: 149 Grand Caverns Drive

   SIC Codes: 3081 – Unsupported Plastics Film and Sheet
   2671 – Packaging Paper and Plastics Film, Coated and Laminated
   2673 – Plastics, Foil and Coated Paper Bags
   4952 – Sewage Treatment Plant

2. Permit No. VA0001767; Expiration Date: December 31, 2015

3. Owner: Pactiv, LLC
   Contact Name: William R. Youell, P.E.
   Title: Technical Manager
   Telephone No: (540) 249-2022
   Email: wyouell@pactiv.com

4. Application Complete Date: July 10, 2015

   Permit Writer: Bev Carver Date: August 21, 2015
   Reviewed By: Dawn Jeffries, Brandon Kiracofe Date: August 26, 2015, October 15, 2015

   Public Comment Period: November 12, 2015 to December 14, 2015

5. Receiving Stream Name: South River (Outfall 001), South River, UT (Outfall 002 and 003)
   River Mile: Outfall 001- 4.37; Outfall 002 - 0.08; Outfall 003 - 0.27
   Use Impairment: Yes (Outfall 001)
   Special Standards: pH
   Tidal Waters: No
   Watershed Name: VAV – B32R Lower South River
   Basin: Potomac; Subbasin: Shenandoah
   Section: 3; Class: IV

6. Operator License Requirements per 9VAC25-31-200.C: None

7. Reliability Class per 9VAC25-790: II (Internal Outfall 101 – assigned June 28, 1996)

8. Permit Characterization:
   ☑ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
   ☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

9. Description of Wastewaters and Treatment Facilities: **Appendix A**

   Total Number of Outfalls = 3 external, 1 internal

10. Discharge Location Description and Receiving Waters Information: **Appendix B**

11. Antidegradation (AD) Review & Comments per 9VAC25-260-30:
Tier Designation: South River - Tier 1 (Outfall 001); South River, UT - Tier 1(Outfall 002 and 003)

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The facility discharges directly to South River via Outfall 001. South River in the immediate vicinity of the discharge is listed on the 303(d) list for non-attainment due to:

- E. coli and Fecal Coliform
- Mercury in fish tissue (fish consumption advisory)
- PCB in fish tissue (fish consumption advisory)
- Benthics

Bacterial impairment and fish consumption advisories are not used as sole bases for classifying a receiving stream as Tier 1. In the previous Fact Sheet there was no benthic impairment so Outfall 001 was considered Tier 2. Since the stream is now listed as impaired for benthics, the Tier was changed from Tier 2 to Tier 1.

The antidegradation baseline for DO has previously been set at 7.5 mg/L. No other antidegradation baselines are established since the stream is now considered Tier 1.

South River, UT in the immediate vicinity of Outfall 002 and 003 is determined to be Tier 1 because it is a dry ditch and it is not expected to maintain aquatic life uses.

Antidegradation baselines are not calculated for Tier 1 waters.

12. Site Inspection: Performed by Bev Carver on July 20, 2015

13. NPDES Permit Rating Worksheet: **Appendix A**
The worksheet updated using current information regarding the facility.
☐ Major ☑ Minor Score = 50

14. Effluent Screening and Effluent Limitations: **Appendix C**

15. Effluent Toxicity Testing Requirements included per 9VAC25-31-220.D: ☐ Yes ☑ No **Appendix C**

This facility's SIC Code(s) and activities contributing wastewater do not fall within the categories for which aquatic toxicity monitoring is required, the facility does not have an IWC ≥ 33%, and the discharge is not deemed to have the potential to cause or contribute to instream toxicity.

16. Management of Sludge:
Sludge from the treatment process will be pumped and hauled to the North River WWTF in Mt. Crawford where it will undergo further treatment. The Sludge Management Plan (SMP) for the sewage treatment plant discharging via Internal Outfall 101 will be approved with this reissuance of the permit.

17. Permit Changes and Bases for Special Conditions: **Appendix D**

18. Material Storage per 9VAC25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.

19. Antibacksliding Review per 9VAC25-31-220.L: This permit complies with the antibacksliding provisions of the VPDES Permit Regulation.

20. Impaired Use Status Evaluation per 9VAC25-31-220.D: The South River is listed as not meeting the General Standard for aquatic life use due to a documented benthic impairment. The South River downstream of the Pactiv, LLC discharge is listed as having elevated levels of bacteria and total phosphorus (TP) and as having a fish consumption advisory due to the documented presence of mercury and PCBs in fish.

    TMDLs addressing these local impairments include the following WLAs for this discharge:

    a. Mercury – The mercury TMDL for the South River was approved by EPA on June 3, 2010. Outfall 001 for this facility was assigned a WLA in the Mercury TMDL of 17 grams/year based on a design flow of 3.2 MGD and a target concentration of 3.8 ng/L. The TMDL also specifies an average daily WLA of 0.046 grams/day and a maximum daily WLA of 0.10 grams/day. This allocation is being addressed in the permit through a special condition for mercury monitoring and minimization.

    b. E. coli – The South River Watershed Bacterial and Benthic TMDL was approved by EPA on December 3, 2009. Outfall 101 for this facility was assigned an E. coli WLA of 3.31×10^{10} cfu/yr based on a design flow of 0.019 MGD and a concentration of 126 cfu/100mL.

    c. Total Phosphorus (TP) – The South River Watershed Bacterial and Benthic TMDL was approved by EPA on December 3, 2009. Outfall 101 for this facility was assigned a TP WLA of 65.6 kg/yr based on a design flow of 0.019 MGD and a TP concentration of 2.5 mg/L.

    d. Sediment – The South River Watershed Bacterial and Benthic TMDL was approved by EPA on December 3, 2009. TMDL allocations for TSS at Outfall 101 based on 0.019 MGD are specified. The TMDL includes an annual WLA for sediment of 0.7 tonnes/year and a daily WLA of 0.003 tonnes/day at Outfall 101. The TMDL also specifies an average TSS concentration of 28 mg/L and a maximum TSS of 48 mg/L.

    e. Outfall 102 (coal pile runoff) – The coal pile was removed in 2010 so Outfall 102 for the coal pile runoff was removed from the permit when it was reissued on May 1, 2011. The South River TMDL includes an annual WLA for sediment of <0.1 tonnes/year and a daily WLA for sediment of <0.001 tonnes/day. In addition, the TMDL specifies average and maximum TSS concentrations of 50 mg/L. No design flow was specified in the TMDL because Outfall 102 was for coal pile runoff.

21. Regulation of Users per 9VAC25-31-280.B.9: N/A – There are no industrial users associated with this facility other than the owner.

22. Stormwater Management per 9VAC25-31-120: Application Required? ☑Yes ☐No
    Applicable stormwater management requirements have been included in this permit.

23. Compliance Schedule per 9VAC25-31-250: None required by this permit.

24. Variances/Alternative Limits or Conditions per 9VAC25-31-280.B, 100.H, and 100.M: None

25. Financial Assurance Applicability per 9VAC25-650-10: N/A – This facility does not serve private residences.

26. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☑ No

27. Nutrient Trading Regulation per 9VAC25-820: See Appendix C
General Permit Required: ☐ Yes ☑ No

    This facility is not required to maintain coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen (TN) and Total Phosphorus (TP) Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9VAC25-820) because it is not listed with a WLA in the Registration List in 9 VAC 25-820-70; nor does the permit authorize expansion to 0.040 MGD or more (or an equivalent industrial load) that is subject to an offset or technology-based requirement; nor it is a new treatment works permitted to discharge more than 1,000 gpd and less than 39,999 gpd and had not commenced the discharge prior to January 1, 2011.

28. Nutrient monitoring included per Guidance Memo No. 14-2011: ☑ Yes ☐ No

    This facility is a Nonsignificant Discharger (all facilities not classified as Significant Dischargers as defined in the Nutrient Trading Watershed General Permit Regulation 9VAC25-820). Effluent sampling for TN has not previously been completed and therefore has been included in the permit.

29. Threatened and Endangered (T&E) Species Screening per 9VAC25-260-20 B.8: Because this is not an issuance or reissuance that allows increased discharge flows, T&E screening is not automatically required. However, in accordance with the VPDES Memorandum of Understanding, T&E screening was coordinated on May 19, 2014 through DCR & USFWS based upon request. Comments were received from DCR on June 12, 2014 and from USFWS on June 2, 2014 and are included in the permit processing file. Comments were considered in the drafting of the permit and were also forwarded to the permittee.

30. Public Notice Information per 9VAC25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Bev Carver at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7805, Beverley.carver@deq.virginia.gov.

    Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

31. Historical Record:

- Certificate No. 1068 was issued to Reynolds Metals Company on April 26, 1957, authorizing the construction of sewage disposal facilities, including treatment to serve its manufacturing facilities.
- Certificate No. 1476 was issued to Reynolds Metals Company on March 27, 1963, authorizing the discharge of industrial wastewater.
- In 1971, the wastewater treatment system consisted of a two-chamber septic tank and sand filter which treated the sanitary wastewater. The effluent from this system was mixed with non-contact cooling water prior to discharge to the river.
- Plans & Specs for the 0.019 MGD wastewater treatment facility were approved on June 28, 1996.
- The facility began discharging from the new wastewater treatment facility in October 1996.
- Permit was reissued on December 31, 2000 under the following names – Owner: Reynolds Metals Company, Facility Name: Reynolds Metals Company WWTP.
- Permit was modified on January 21, 2005 under the following names – Owner: Alcoa Flexible Packaging, LLC, Facility Name: Alcoa Flexible Packaging, LLC WWTP.
- Permit was reissued on January 1, 2006 under the following names – Owner: Alcoa Flexible Packaging, LLC, Facility Name: Alcoa Flexible Packaging, LLC (Grottoes Plastic Plant)
- Pemit was modified on May 5, 2006 under the following names – Owner: Alcoa Packaging, LLC, Facility Name: Alcoa Packaging, LLC (Grottoes Plastic Plant)
- Permit was modified on March 13, 2008 under the following names – Owner: Reynolds Packaging LLC, Facility Name: Reynolds Packaging LLC.
- Permit was reissued on May 1, 2011 under the following names – Owner: Reynolds Packaging, LLC, Facility Name: Reynolds Packaging, LLC. In addition, Outfall 102 for coal pile runoff was removed from the permit. In the June 18, 2010 application, the permittee notified DEQ that the coal pile at the facility had been removed.
- A CTO was issued on May 16, 2011 for a change from chlorine disinfection to UV disinfection. However, due to reliability issues with the equipment purchased, the permittee chose to keep the existing chlorine disinfection system.
- The permit was modified on November 19, 2012 to change the name of the owner to – Owner: Pactiv, LLC and Facility Name: Pactiv, LLC – Grottoes Plastics Plant.

Fact Sheet – VPDES Permit No. VA0001767 – Pactiv, LLC

APPENDIX A

DESCRIPTION OF WASTEWATERS AND TREATMENT FACILITIES

Pactiv, LLC manufactures plastic films from synthetic resins. There are three external outfalls (001, 002 and 003) and one internal outfall (101) identified at this facility. A coal pile was formerly located at the facility and was permitted to discharge through internal Outfall 102. The coal pile was removed in 2010, so Outfall 102 was removed from the permit.

A description of each outfall is given below.

Outfall 101 – Pactiv has a WWTP which is used for treatment of both sanitary and industrial process wastewater. The industrial process wastewater directed to the WWTP includes pelletization contact cooling water and PVC extrusion lump cooling tank contact water. Wastewaters from the electrostatic precipitators is directed to an ultrafiltration pretreatment unit which then discharges to the WWTP.

The discharge from the WWTP serving Outfall 101 combines with noncontact cooling water, stormwater exposed to industrial activity and other non-process wastewaters prior to discharge through Outfall 001 to the South River.

The WWTP consists of the following units: bar screen, flow equalization, activated sludge aeration tankage, secondary clarification, chlorination, and aerobic sludge digestion. Sludge from the treatment process is periodically hauled to the North River WWTF for further treatment.

Design flow: 0.019 MGD
Average Flow (2013 – 2015): 0.009 MGD

Outfall 001 – The following sources of wastewater are directed to Outfall 001:

- Final discharge from the WWTP serving internal outfall 101
- Stormwater exposed to industrial activity *
- PVC Extrusion non-contact cooling water
- PVC Extrusion vacuum pump seal water
- Nylon Extrusion non-contact cooling water
- Compressed air System non-contact cooling water
- Compressed air system condensate
- Water cooled A/C units non-contact cooling water
- Boiler House Blowdown
- RO/Softening System
- Boiler House condensate
- Pelletization non-contact cooling water
- Vacuum Pump Exhaust, Pyrolysis Unit seal water
- Cast Line Non-contact cooling water
- Sprinkler firewater
- HDPE Sheet Extrusion non-contact cooling water

* It is possible for the permittee to sample Outfall 001 prior to comingling with the discharge from internal Outfall 101. Because of the layout of yard drains, roof drains and non-contact cooling water drains at the facility, it is not possible to segregate a sampling location for stormwater exposed to industrial activity. For this reason, nutrient monitoring per Guidance Memo No. 14-2011 has not been required at Outfall 001.

Maximum 30-day Average Flow: 0.789 MGD

In the 2011 application, the maximum 30-day average flow was 1.245 MGD. The permittee indicated that water conservation measures have been achieved over the past 5 years.

The maximum 30-day average flow at Outfall 001 was used for the toxics evaluation.

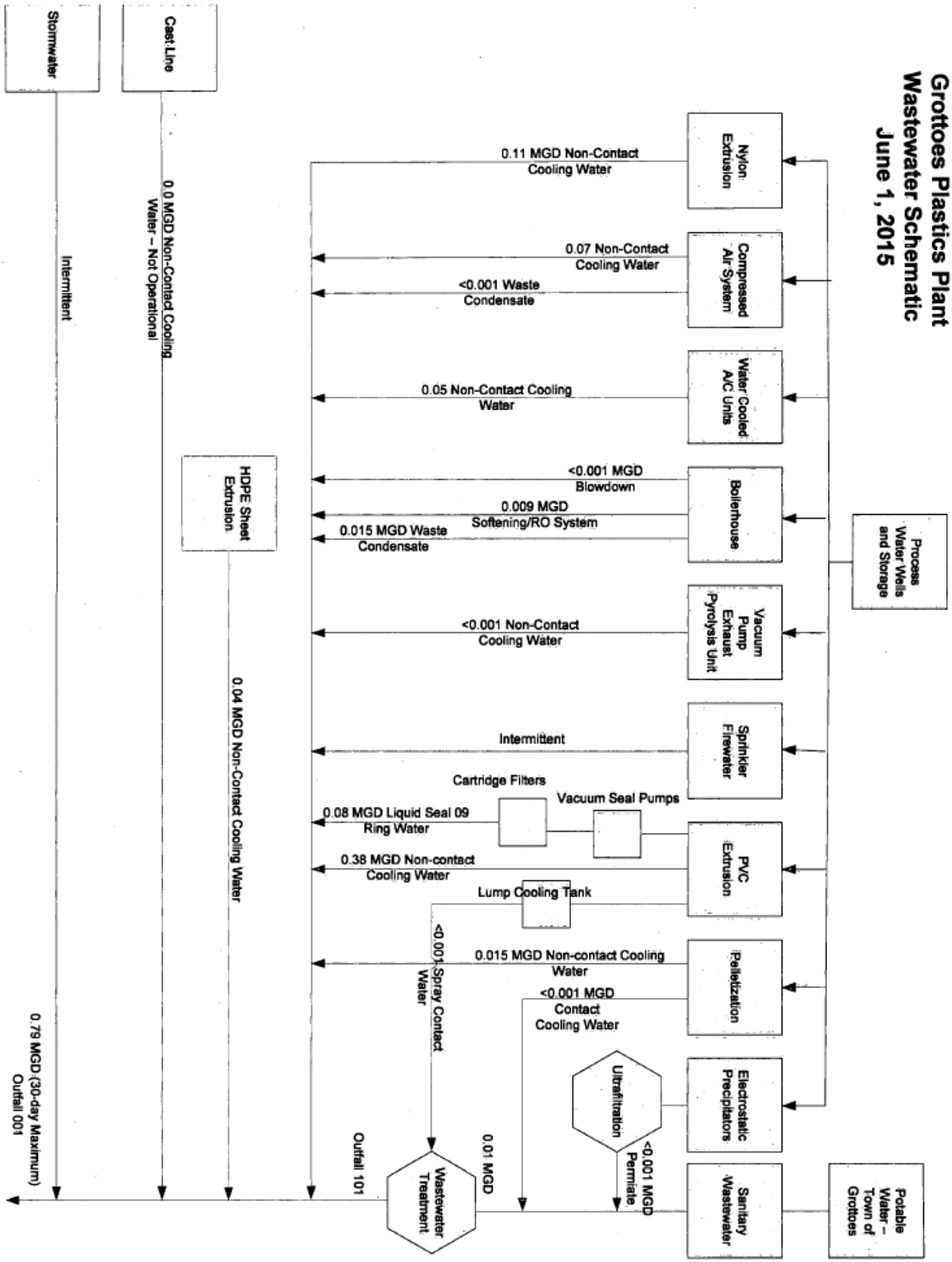
Long Term Average Flow: 0.679 MGD

The long term average flow at Outfall 001 was used for the DO modeling evaluation.

This approach was carried forward from the approach used in previous permits.

Outfall 002 – A portion of solely stormwater exposed to industrial activity is directed to Outfall 002 which discharges to South River, UT. The unnamed tributary enters the South River upstream of Outfall 001. Nutrient monitoring per Guidance Memo No. 14-2011 has been required at this outfall.

Outfall 003 – Outfall 003 receives solely stormwater not exposed to industrial activity from a grassy area. The discharge enters South River, UT which runs parallel to the entrance road into the plant. The UT discharges into the South River just downstream of Outfall 001.


Grottoes Plastics Plant
Wastewater Schematic
June 1, 2015
Stormwater
Cast Line
Intermittent
0.0 MGD Non-Contact Cooling Water – Not Operational
0.04 MGD Non-Contact Cooling Water
0.79 MGD (30-day Maximum)
Outfall 001
Outfall 101
HDPE Sheet Extrusion
Nylon Extrusion
0.11 MGD Non-Contact Cooling Water
Compressed Air System
0.07 Non-Contact Cooling Water
<0.001 Waste Condensate
Water Cooled A/C Units
0.05 Non-Contact Cooling Water
Boilerhouse
<0.001 MGD Blowdown
0.009 MGD Softening/RO System
0.015 MGD Waste Condensate
Process Water Wells and Storage
Vacuum Pump Exhaust Pyrolysis Unit
<0.001 Non-Contact Cooling Water
Sprinkler Firewater
Intermittent
Cartridge Filters
Vacuum Seal Pumps
0.08 MGD Liquid Seal 09 Ring Water
PVC Extrusion
0.38 MGD Non-contact Cooling Water
Lump Cooling Tank
<0.001 Spray Contact Water
Pelletization
0.015 MGD Non-contact Cooling Water
<0.001 MGD Contact Cooling Water
Ultrafiltration
Electrostatic Precipitators
<0.001 MGD Permiate
0.01 MGD
Wastewater Treatment
Sanitary Wastewater
Potable Water – Town of Grottoes

VPDES Permit Rating Work Sheet

Facilities identified under SIC Codes 3081, 2671, and 2673 have the following characteristics as defined in Appendix A to the NPDES Permit Rating Work Sheet found in the VPDES Permit Manual.

1987 SIC Code	1987 SIC Code Title	40 CFR Part & Sub-Part	Sub-part Title	Human Health Toxicity Number	Total Toxicity Number	Industrial Sub-category Number
3081	Unsupported Plastic Film & Sheet	463 A	Contact Cooling & Heating Water	4	6	1
3081	Unsupported Plastic Film & Sheet	463 B	Cleaning Water	5	6	2
2671	Paper Coating & Glazing	NA	Converted Paper	1	1	99
2673	Plastic, Foil, & Coated Bags Except Textile Bags	NA	Converted Paper	1	1	99

Factor 1 – Toxic Pollutant Potential - This is unchanged from the previous rating.

Factor 2 – Flow/Stream Flow Volume - This is unchanged from the previous rating.

Factor 3.A. – Oxygen Demanding Pollutant - The permit contain limits for BOD_5 or COD. This is unchanged from the previous rating.

Factor 3.B. – TSS - The permit contains limits for TSS. This is unchanged from the previous rating.

Factor 3.C. – Nitrogen Pollutant - The permit does not contain limits for any Nitrogen pollutants. This is unchanged from the previous rating.

Factor 4. – Public Health Impact – A worst case assumption is made for proximity to public water supplies. This is unchanged from the previous rating.

Factor 5.A. – The permit contains permit limitations for pH and Temperature based on WQS. This is unchanged from the previous rating.

Factor 5.B. – This is unchanged from the previous rating.

Factor 5.C. – The permit does not contain Toxics Management Program requirements. This is unchanged from the previous rating.

Factor 6. – Proximity to Near Coastal Waters: Headquarters Priority Permit Indicator (HPRI) Code #4 – This discharge occurs in a non-coastal county.

NPDES PERMIT RATING WORK SHEET

☐ Regular Addition
☐ DiscretionaryAddition
X No status change
☐ Deletion

NPDES NO. **VA0001767**

Facility Name: **Pactiv, LLC**

City: **Grottoes, VA**

Receiving Water: **South River and South River, UT**

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?
1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate
☐ YES; score is 600 (stop here) ☑ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)
☑ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: 3081 Other SIC Codes: 2671, 2673, 4952
Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams			[ ] 3.	3	15	[ ] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[X] 6.	6	30	[ ] 10.	10	50

Code Number Checked : 6

Total Points Factor 1: 30

FACTOR 2: Flow/Stream Flow Volume (*Complete either Section A or Section B; check only one)*

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)		Code	Points
Type I: Flow < 5 MGD	☐	11	0
Flow 5 to 10 MGD	☐	12	10
Flow > 10 to 50 MGD	☐	13	20
Flow > 50 MGD	☐	14	30
Type II: Flow < 1 MGD	☐	21	10
Flow 1 to 5 MGD	☐	22	20
Flow > 5 to 10 MGD	☐	23	30
Flow > 10 MGD	☐	24	50
Type III: Flow < 1 MGD	☐	31	0
Flow 1 to 5 MGD	☐	32	10
Flow > 5 to 10 MGD	☐	33	20
Flow > 10 MGD	☐	34	30

Section B X Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50 %	☐	43	20
Type II:	< 10 %	X	51	0
	10 % to <50 %	☐	52	20
	> 50 %	☐	53	30

Code Checked from Section A or B: 51

Total Points Factor 2: 0

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ☐ BOD ☐ COD ☐ Other:_____

			Code	*Points*
Permit Limits: (check one)	X	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 1

Points Scored: 0

B. Total Suspended Solids (TSS)

			Code	*Points*
Permit Limits: (check one)	X	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 5000 lbs/day	3	15
	☐	> 5000 lbs/day	4	20

Code Checked: 1

Points Scored: 0

C. Nitrogen Pollutant: (check one) ☐ Ammonia ☐ Other: _____

		Nitrogen Equivalent	*Code*	*Points*
Permit Limits: (check one)	☐	< 300 lbs/day	1	0
	☐	300 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 0

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

X YES (If yes, check toxicity potential number below)

☐ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column ☐ check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	X 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: 5

Total Points Factor 4: 5

FACTOR 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:

		Code	Points
X	Yes	1	10
☐	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
☐	Yes	1	0
X	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
☐	Yes	1	10
X	No	2	0

Code Number Checked: A 1 B 2 C 2

Points Factor 5: A 10 + B 5 + C 10 = 15 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): _51__ *Enter the multiplication factor that corresponds to the flow code:* _0.10__

Check appropriate facility HPRI Code (from PCS):

	HPRI#	*Code*	*HPRI Score*
☐	1	1	20
☐	2	2	0
☐	3	3	30
X	4	4	0
☐	5	5	20

HPRI code checked: 4

Flow Code	*Multiplication Factor*
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) 0 X (Multiplication Factor) 0.1 = 0 (TOTAL POINTS)

B. Additional Points ☐ NEP Program
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

N/A

	Code	Points
☐ Yes	1	10
☐ No	2	0

C. Additional Points ☐ Great Lakes Area of Concern
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

N/A

	Code	Points
☐ Yes	1	10
☐ No	2	0

Code Number Checked: A 4 B N/A C N/A -

Points Factor 6: A 0 + B NA + C NA = 0 TOTAL

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	30
2	Flows/Streamflow Volume	0
3	Conventional Pollutants	0
4	Public Health Impacts	5
5	Water Quality Factors	15
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	50

S1. Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) X No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

X No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 50

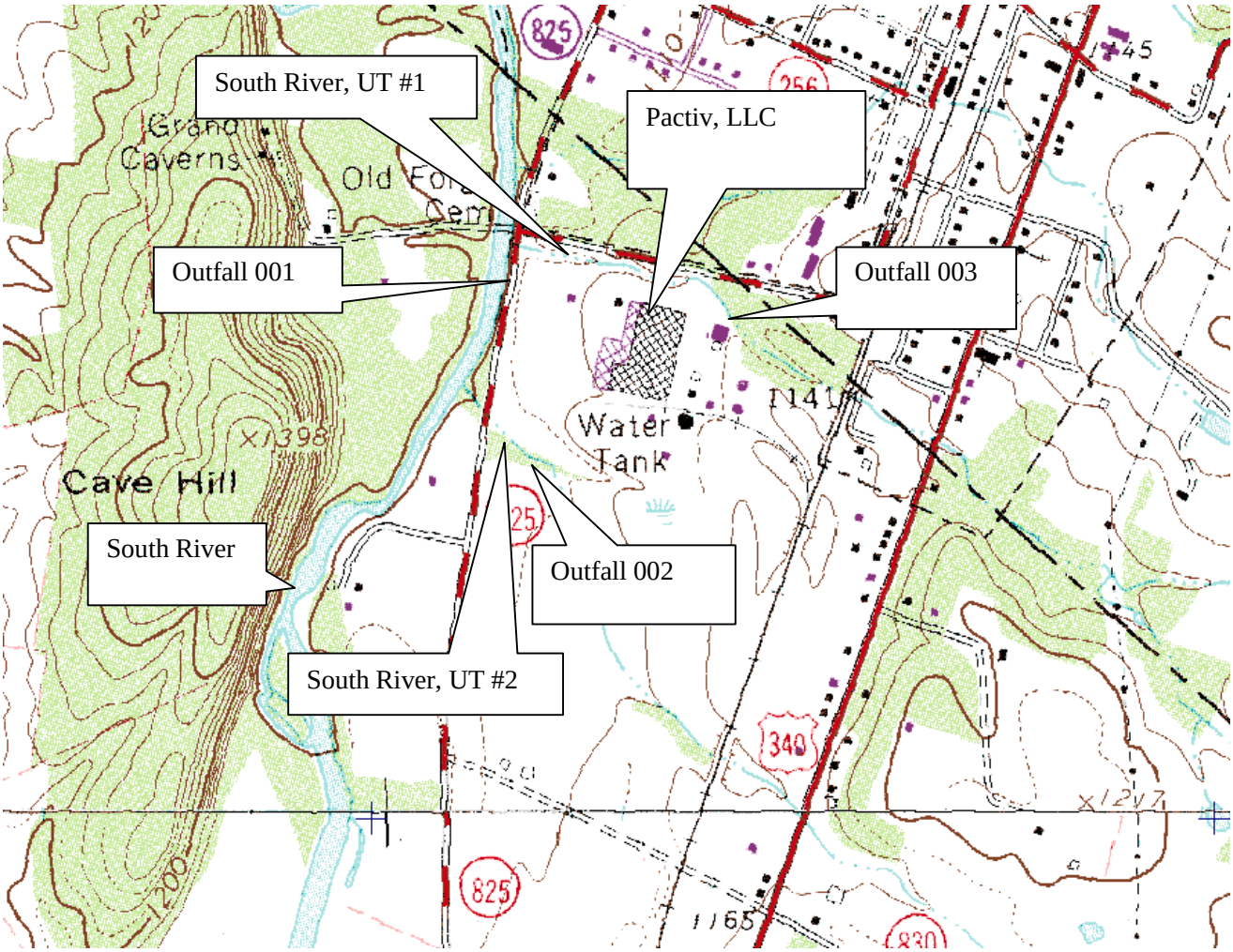
OLD SCORE: 50

Bev Carver
Permit Writer's Name
540-574-7805
Phone Number
July 17, 2015
Date

APPENDIX B

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

Pactiv, LLC discharges to South River from Outfall 001, to South River, U.T. from Outfall 002 (stormwater only), and to a separate South River, U.T. from Outfall 003 (stormwater only) in Augusta County. The locations of Outfalls 001, 002, and 003 are shown on the topographical map below.



PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessments Review table and corresponding map below.

WATER QUALITY ASSESSMENTS REVIEW
POTOMAC-SHENANDOAH RIVER BASIN
7/8/2015

IMPAIRED SEGMENTS

SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
B15R-01-BAC	Middle River	43.06	0.00	43.06	Fecal Coliform, E-coli	
B17R-01-BAC	North River	31.26	0.00	31.26	E-coli, Fecal Coliform	
B23R-01-BEN	North River	16.32	0.00	16.32	Benthic	
B29R-01-BAC	Congers Creek/Duck Run/Mill Creek	5.51, 2.75, 5.93	0.00, 0.00, 0.00	5.51, 2.75, 5.93	Fecal Coliform	
B29R-01-BEN	Mill Creek	5.93	0.00	5.93	Benthic	
B32R-01-BEN	South River	29.58	0.00	29.58	Benthic	
B32R-02-BAC	South River	39.74	0.00	39.74	E-coli, Fecal Coliform	
B32R-02-HG	South River/NF Shenandoah/SF Shenandoah Rivers	163.27	8.16	155.11	Mercury in Fish Tissue	
B32R-02-PCB	South River	5.29	0.00	5.29	PCB in Fish Tissue	
B33R-01-BAC	South Fork Shenandoah River	100.97	41.98	58.99	Fecal Coliform	
B33R-01-BEN	South Fork Shenandoah River	100.97	41.98	58.99	Benthic	
B33R-02-PH	Deep Run	4.33	0.00	4.33	pH	

PERMITS

PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0001767	**Pactiv, LLC**	**South River**	**4.37**	**381532**	**0784953**	**VAV-B32R**
VA0022349	Weyers Cave WWTP	North River	6.91	381756	0785254	VAV-B23R
VA0062481	New Hope WWTP	Middle River	12.55	381305	0785425	VAV-B15R
VA0065374	Grottoes STP	South River	1.59	381710	0784940	VAV-B32R
VA0088986	Black Rock Mobile Home Park	South River X-Trib	1.00	381513	0784851	VAV-B32R

MONITORING STATIONS

STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
Madison Run	1BMAD000.15	0.15	5/11/01	381744	0784812	
Middle River	1BMDL005.63	5.63	2/22/11	381428	0785252	
Middle River	1BMDL009.23	9.23	7/7/05	381355	0785352	
Middle River	1BMDL043.35	43.35	1/30/07	381324	0790622	
Mill Creek	1BMIC001.99	1.99	3/29/05	381945	0784852	
North River	1BNTH000.18	0.18	9/23/99	381753	0784837	
North River	1BNTH004.39	4.39	12/26/01	381655	0785105	
North River	1BNTH009.23	9.23	3/13/06	381833	0785448	
North River	1BNTH007.69	7.69	5/11/01	381823	0785335	
Polecat Draft	1BPCD000.20	0.2	7/30/91	381342	0785301	
Polecat Draft	1BPCD001.03	1.03	7/1/93	381309	0785231	
S.F. Shenandoah River	1BSSF100.10	100.1	4/24/79	381844	0784616	
S.F. Shenandoah River	1BSSF100.11	100.11		381843	0784618	
S.F. Shenandoah River	1BSSF100.07	100.07	3/2/70	381805	0784613	
South River	1BSTH000.19	0.19	3/2/70	381741	0784837	
South River	1BSTH000.97	0.97	8/9/07	381714	0784907	
South River	1BSTH001.92	1.92	8/9/07	381707	0784956	
South River	1BSTH002.14	2.14	5/11/01	381702	0785004	
South River	1BSTH002.91	2.91	8/9/07	381626	0785005	
South River	1BSTH003.91	3.91	8/9/07	381549	0784958	
South River	1BSTH004.21	4.21	3/16/07	381529	0784952	
South River	1BSTH004.59	4.59	9/12/07	381517	0785000	
South River	1BSTH004.86	4.86	8/8/07	381506	0785008	
South River	1BSTH005.90	5.9	8/8/07	381418	0785026	
South River	1BSTH007.02	7.02	8/8/07	381335	0784958	
South River	1BSTH007.80	7.8	3/2/70	381307	0785014	
South River	1BSTH000.02	0.02	6/24/98	381745	0784830	
Middle River	1BMDL001.83	1.83	4/30/79	381543	0785144	
Mill Creek	1BMIC001.00	1.00	7/1/93	381859	0784909	
South River	1BSTH005.36	5.36	4/27/10	381440	0785011	

PUBLIC WATER SUPPLY INTAKES

OWNER	STREAM	RIVER MILE				
None						

WATER QUALITY MANAGEMENT PLANNING REGULATION

Is this discharge addressed in the WQMP regulation? **No**

If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?

PARAMETER	ALLOCATION					

WATERSHED NAME

VAV-B32R Lower South River

FLOW FREQUENCY DETERMINATION

The subject facility discharges to the South River near Grottoes, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit reissuance.

The VDEQ has operated a continuous record gage on the South River at Harriston, VA (#01627500) from 1925-1951 and from 1968 to present. This gage is located approximately 3 miles upstream of the discharge point. The flow values at the discharge point were determined using drainage area proportions to the reference gage. The flow frequencies are presented below.

South River at Harriston, VA (#01627500)

Drainage Area = 212 mi^2

1Q30 =	34 cfs	High Flow 1Q10 =	61 cfs
1Q10 =	42.4 cfs	High Flow 7Q10 =	68 cfs
7Q10 =	48.2 cfs	High Flow 30Q10 =	85 cfs
30Q10 =	52.1 cfs	HM =	129 cfs
30Q5 =	58.2 cfs		

South River at Pactiv, LLC discharge point:

Drainage Area = 222.78 mi^2

1Q30 =	35.7 cfs	(23.1 mgd)	High Flow 1Q10 =	64.1 cfs	(41.4 mgd)
1Q10 =	44.6 cfs	(28.8 mgd)	High Flow 7Q10 =	71.5 cfs	(46.2 mgd)
7Q10 =	50.6 cfs	(32.7 mgd)	High Flow 30Q10 =	89.3 cfs	(57.7 mgd)
30Q10 =	54.7 cfs	(35.4 mgd)	HM =	136 cfs	(87.6 mgd)
30Q5 =	61.2 cfs	(39.5 mgd)			

The high flow months are January through May.

The analysis assumes that there are no significant discharges, withdrawals, or springs that may influence the flow in the South River upstream of the discharge point.

EFFLUENT/STREAM MIXING EVALUATION – OUTFALL 001

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

Annual Season (June – December)	**Wet Season (January – May)**
Effluent Flow = 0.789 MGD Stream 7Q10 = 32.7 MGD Stream 30Q10 = 35.4 MGD Stream 1Q10 = 28.8 MGD Stream slope = 0.0026 ft/ft Stream width = 45 ft Bottom scale = 2 Channel scale = 1	Effluent Flow = 0.789 MGD Stream 7Q10 = 46.2 MGD Stream 30Q10 = 57.7 MGD Stream 1Q10 = 41.4 MGD Stream slope = 0.0026 ft/ft Stream width = 45 ft Bottom scale = 2 Channel scale = 1
Mixing Zone Predictions @ 7Q10	Mixing Zone Predictions @ 7Q10
Depth = 1.1454 ft Length = 2296.97 ft Velocity = 1.0058 ft/sec Residence Time = .0264 days	Depth = 1.4085 ft Length = 1920.22 ft Velocity = 1.1466 ft/sec Residence Time = .0194 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.	Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.
Mixing Zone Predictions @ 30Q10	Mixing Zone Predictions @ 30Q10
Depth = 1.201 ft Length = 2204.47 ft Velocity = 1.0365 ft/sec Residence Time = .0246 days	Depth = 1.6131 ft Length = 1704.36 ft Velocity = 1.2473 ft/sec Residence Time = .0158 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.	Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.
Mixing Zone Predictions @ 1Q10	Mixing Zone Predictions @ 1Q10
Depth = 1.0619 ft Length = 2452.33 ft Velocity = .9585 ft/sec Residence Time = .7107 hours	Depth = 1.3195 ft Length = 2031.51 ft Velocity = 1.0999 ft/sec Residence Time = .5131 hours
Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.	Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.
Virginia DEQ Mixing Zone Analysis Version 2.1	Virginia DEQ Mixing Zone Analysis Version 2.1

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE
4411 Early Road – P.O. Box 3000 Harrisonburg, VA 22801

SUBJECT: Site Visit for Reissuance of VPDES Permit No. VA0001767 for Pactiv, LLC, Augusta County

TO: Permit Processing File

FROM: Bev Carver

DATE: July 20, 201

On July 20, 2015, the writer, accompanied by William Youell, Technical Director for Pactiv, LLC, performed a site visit at the subject facility and the discharge points.

Outfall 001

Outfall 001 discharge to South River

Drainage to Outfall 002

Drainage to Outfall 002

Culvert with combined discharge from Outfall 002

Stormwater Outfall 002 final discharge location prior to leaving property boundary. Discharge to South River, UT #2

Grassy area draining to stormwater Outfall 003

South River, UT #1 receives stormwater discharge from Outfall 003

APPENDIX C

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

LIMITING FACTORS – OVERVIEW:
The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (9VAC25-720-50 Potomac, Shenandoah River Basin)	
A. TMDL limits	Internal Outfall 101: E. coli, Sediment, TP Outfall 001: Total Recoverable Mercury
B. Non-TMDL WLAs	None
C. CBP (TN & TP) WLAs	None
Federal Effluent Guidelines – 40 CFR Part 133 Secondary Treatment Regulations	Internal Outfall 101: BOD_5, TSS, pH
Federal Effluent Guidelines – Plastics Molding and Forming 40 CFR Part 463, Subparts A and B	Internal Outfall 101: BOD_5, TSS, O&G
BPJ/Agency Guidance limits	Internal Outfall 101: TRC (contact), TRC (effluent)
Water Quality-based Limits - numeric	Internal Outfall 101: E. coli Outfall 001: pH, Temperature
Water Quality-based Limits - narrative	None
Technology-based Limits (9VAC25-40-70)	None
Toxics Management Program (TMP)	Not applicable
Stormwater Limits	Not applicable

EVALUATION OF DISCHARGES FROM OUTFALL 101 (WASTEWATER TREATMENT FACILITY)

A comparison of technology and water quality-based limits was performed, and the most stringent limits were selected. The selected limits are summarized in the table below.

Basis for Permit Limits - Outfall 101 **Design Flow: 0.019 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		1/Month	Estimate
BOD_5	2,3,4	29 mg/L	2.1 kg/d	43 mg/L	3.1 kg/d	1/Month	Grab
TSS	2,6	28 mg/L	2.1 kg/d	46 mg/L	3.3 kg/d	1/Month	Grab
Oil and Grease (kg/d)	2	0.28		0.49 kg/d		1/Month	Grab
Effluent Chlorine (TRC)(mg/L)*	5	NA		4.0		1/Day	Grab
E. coli (geometric mean) (N/100 mL)	3,6	126		NA		4/Month in any month of each calendar year * or 4/Month ** 10 a.m. to 4 p.m.	Grab
Total Phosphorus (TP)(mg/L)	6,7	NL		NL		1/Month	Grab
TKN (mg/L)	7	NA		NL		1/Year	Grab
Nitrite-N + Nitrate-N (mg/L)	7	NA		NL		1/Year	Grab
Total Nitrogen (mg/L)	7	NA		NL		1/Year	Calculated
---	---	Annual Average		Maximum		---	---
TP – Year to Date (kg/yr)	6	NA		NL		1/Month	Calculated
TP – Calendar Year (kg/yr)	6	NA		65.6		1/Year	Calculated
---	---	Minimum		Maximum		---	---
pH (SU)	3	6.5		9.5		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3,5	1.0		NA		1/Day	Grab

NL = No Limitation, monitoring required *NA = Not Applicable*
Refer to permit for definitions of monitoring frequencies and sample types.
Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be derived from the results of those tests.

** Applicable only when chlorination is used for disinfection*
*** Applicable if an alternative to chlorination is used for disinfection*

Bases for Effluent Limitations:

1. VPDES Permit Regulation (9VAC25-31)
2. Federal Effluent Requirements
3. Water Quality Standards (9VAC25-260)
4. Regional Stream Model simulation
5. Best Professional Judgment (BPJ)
6. South River TMDL
7. Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed dated August 8, 2014.

Outfall 101

The design flow of the WWTP serving internal Outfall 101 is 0.019 MGD. The discharge from Outfall 101 combines with noncontact cooling water, stormwater and other non-process wastewaters prior to discharge through Outfall 001 to the South River.

The WWTP serving Outfall 101 is used for treatment of both sanitary wastewater and industrial wastewaters. The sanitary wastewaters are subject to the Federal Effluent Guidelines (FEGs) for secondary treatment. The industrial wastewater is subject to the FEGs for Plastics Molding and Forming; therefore, sanitary flow and process wastewater flows going to the WWTP were required to calculate technology-based permit limits at Outfall 101.

The 2015 application reported flows expected to be discharged to the WWTP serving Outfall 101 are as follows:

1. Pelletization contact cooling water – In the 2010 permit application, this flow was reported as 0.000040 MGD. In the 2015 application, this flow was reported as <0.001 MGD.

2. Polyvinyl chloride (PVC) Extrusion Lump Cooling Tank Spray Contact Water – In the 2010 permit application, this flow was reported as 0.0003 MGD. In the 2015 application, this flow was reported as <0.001 MGD.

3. Permeate from Electrostatic precipitators (ESP) – Washwater from the ESPs are directed to Ultrafiltration treatment. The permetate from the ultrafiltration is directed to the WWTP serving Outfall 101. In the 2010 permit application, this flow was reported as 0.001440 MGD. In the 2015 application, this flow was reported as <0.001 MGD.

4. Sanitary Flow – Less than 100 gallons per day of the sanitary wastewater is composed of lab wastewaters, mop waters, maintenance wash sink water, and water from hot water vents and ice maker condensate. The design flow of the WWTP serving Outfall 101 is 0.019 MGD. The sanitary wastewater flow used in the 2010 Fact Sheet calculations was 0.01722 MGD.

   The sanitary wastewater flow used in the permit limit calculations for the 2015 Fact Sheet was calculated by subtracting the total process wastewater flow from the design flow as follows:

   0.019 MGD – 0.003 MGD = 0.016 MGD

Plastics Molding and Forming Wastewaters

The Plastics Molding and Forming Point Source Category Effluent Limitations Guidelines became effective on January 30, 1985. The contact cooling water from pelletization and PVC extrusion is subject to mass based BPT effluent limitations for Plastics Molding and Forming, 40 CFR Part 463, Subpart A, Contact Cooling and Heating Subcategory. This portion of the discharge must achieve the effluent limitations guidelines (i.e., mass of pollutant discharged) which are calculated by multiplying the process water usage flow rate for the contact cooling water and spray contact water times the following pollutant concentrations:

Subpart A, Contact Cooling and Heating Subcategory

Pollutant	Daily Maximum *
BOD_5	26 mg/L
TSS	19 mg/L
Oil & Grease (O&G)	29 mg/L
pH	6.0 – 9.0 SU

* Note that Subpart A, Contact Cooling and Heating Subcategory specifies Daily Maximum limits but does not specify Monthly Average limits.

Although the ESP washwater is not subject to the Plastics Molding and Forming Point Source Category Effluent Limitations Guidelines, in this fact sheet the ESP washwater is assumed to be treated to concentrations equivalent to the pollutant concentrations specified in Plastics Molding and Forming, 40 CFR Part 463, Subpart B, Cleaning Water Subcategory that are used to calculate mass based BPT effluent limitations. Those pollutant concentrations are as follows:

Subpart B, Cleaning Water Subcategory

Pollutant	Monthly Average	Daily Maximum
BOD_5	22 mg/L	49 mg/L
TSS	36 mg/L	117 mg/L
Oil & Grease (O&G)	17 mg/L	71 mg/L

Secondary Treatment Requirements for Sewage, 40 CFR Part 133

The sanitary wastewater is subject to the following federal effluent guidelines for secondary treatment:

Pollutant	Monthly Average	Maximum Weekly Average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
pH	6.0 – 9.0 SU	

BOD_5 - Calculation of Adjusted Monthly Average Limits

BOD_5 from pelletization contact cooling water = (0.001 MGD)(26 mg/L *)(3.785) = 0.09841 kg/d

BOD_5 for PVC extrusion contact cooling water = (0.001 MGD)(26 mg/L *)(3.785) = 0.09841 kg/d

*Because subpart A of the FEGs does not specify monthly average limits for the contact cooling water, the daily maximum limit was used in the calculation above for the pelletization and PVC extrusion contact cooling waters.

BOD_5 from ESP washwater = (0.001 MGD)(22 mg/L)(3.785) = 0.08327 kg/d

BOD_5 from sanitary wastewater = (0.016 MGD)(30 mg/L)(3.785) = 1.8168 kg/d

Total BOD_5 load allowed = 0.09841 kg/d + 0.09841 kg/d + 0.08327 kg/d + 1.8168 kg/d = 2.096 kg/d, round to **2.1 kg/d**

The monthly average loading limit is identical to the previous permit limit.

Adjusted monthly average concentration limit = $\frac{2.096 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{2.096}{0.0719}$ = **29 mg/L**

The monthly average concentration limits are identical to the previous limits.

BOD_5 - Calculation of Adjusted Daily Maximum Limits

BOD_5 from pelletization contact cooling water = (0.001 MGD)(26 mg/L)(3.785) = 0.09841 kg/d

BOD_5 for PVC extrusion contact cooling water = (0.001 MGD)(26 mg/L)(3.785) = 0.09841 kg/d

BOD_5 from ESP washwater = (0.001 MGD)(49 mg/L)(3.785) = 0.18546 kg/d

BOD_5 from sanitary wastewater = (0.016 MGD)(45 mg/L*)(3.785) = 2.72 kg/d

* Because the secondary treatment FEGs do not specify daily maximum limits for the sanitary wastewater, the maximum weekly average limit was used in the calculation above for the sanitary waste stream.

Total BOD_5 load allowed = 0.09841 kg/d + 0.09841 kg/d + 0.18546 kg/d + 2.72 kg/d = **3.1 kg/d**

The monthly average mass limit is more stringent than the previous permit due to the revised flow values used.

Adjusted daily maximum concentration limit = $\frac{3.10 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{3.10}{0.0719}$ = **43 mg/L**

The daily maximum concentration limits are more stringent than the previous limits due to the revised flow values used.

Based on a review of the DMR data, the more stringent limits can be met; therefore, no compliance schedule is included.

TSS - Calculation of Adjusted Monthly Average Limits

TSS from pelletization contact cooling water = (0.001 MGD)(19 mg/L*)(3.785) = 0.071915 kg/d

TSS for PVC extrusion contact cooling water = (0.001 MGD)(19 mg/L*)(3.785) = 0.071915 kg/d

* Because Subpart A of the FEGs does not specify monthly average limits for the contact cooling water, the daily maximum limit was used in the calculation above for the pelletization and PVC extrusion contact cooling waters.

TSS from ESP washwater = (0.001 MGD)(36 mg/L)(3.785) = 0.13626 kg/d

TSS from sanitary wastewater = (0.016 MGD)(30 mg/L)(3.785) = 1.8168 kg/d

Total TSS load allowed = 0.071915 kg/d + 0.071915 kg/d + 0.13626 kg/d + 1.8168 kg/d = 2.09689 kg/d, round to 2.1 kg/d

The loading limit of 2.1 kg/d is less stringent than the previous permit due to the revised flow values used. The less stringent TSS limits comply with the antibacksliding provisions of the VPDES Permit Regulation because new effluent flow information is available which would have justified the less stringent limits when the previous limits were established.

Adjusted monthly average concentration limit = $\frac{2.09689 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{2.09689}{0.0719} =$ 29 mg/L

*The monthly average limits must be set at **28 mg/L** based on the TMDL.*

TSS - Calculation of Adjusted Daily Maximum Limits

TSS from pelletization contact cooling water = (0.001 MGD)(19 mg/L)(3.785) = 0.071915 kg/d

TSS for PVC extrusion contact cooling water = (0.001 MGD)(19 mg/L)(3.785) = 0.071915 kg/d

TSS from ESP washwater = (0.001 MGD)(117 mg/L)(3.785) = 0.4428 kg/d

TSS from sanitary wastewater = (0.016 MGD)(45 mg/L*)(3.785) = 2.725 kg/d

* Because the secondary treatment FEGs do not specify daily maximum limits for the sanitary wastewater, the maximum weekly average limit was used in the calculation above for that waste stream.

Total TSS load allowed = 0.071915 kg/d + 0.071915 kg/d + 0.4428 kg/d + 2.725 kg/d = 3.31163 kg/d, round to **3.3 kg/d**

The maximum TSS load limit is more stringent than the previous permit limit due to the revised flows. Based on a review of the DMR data, the more stringent limits can be met. Therefore, no compliance schedule is included.

Adjusted daily maximum concentration limit = $\frac{3.31163 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{3.31163}{0.0719} =$ **46 mg/L**

This daily maximum concentration limit is more stringent than the previous maximum weekly average limit due to the revised flow values used.

The TMDL WLA is 48 mg/L. Since 46 mg/L is less than 48 mg/L, the maximum limits are based on the ELGs.

O&G - Calculation of Adjusted Monthly Average Limits

O&G from pelletization contact cooling water = (0.001 MGD)(29 mg/L*)(3.785) = 0.10976 kg/d

O&G for PVC extrusion contact cooling water = (0.001 MGD)(29 mg/L*)(3.785) = 0.10976 kg/d

* Because Subpart A of the FEGs does not specify monthly average limits for the contact cooling water, the daily maximum limit was used in the calculation above for the pelletization and PVC extrusion contact cooling water.

O&G from ESP washwater = (0.001 MGD)(17 mg/L)(3.785) = 0.064345 kg/d

The federal effluent guidelines for sanitary wastewater do not address O&G; therefore, the sanitary flow is considered to contribute no load when calculating O&G loading limits.

Total O&G load allowed = 0.10976 kg/d + 0.10976 kg/d + 0.064345 kg/d = 0.28386 kg/d, round to 0.28 kg/d

The O&G loading limit of 0.28 kg/d is less stringent than the loading limit in the previous permit. The less stringent O&G limits comply with the antibacksliding provisions of the VPDES Permit Regulation because new effluent flow information is available which would have justified the less stringent limits when the previous limits were established.

$$\text{Adjusted monthly average concentration limit} = \frac{0.28386 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{0.28386}{0.0719} = 3.9 \text{ mg/L}$$

In the 2010 permit, the permittee submitted comments on the draft permit to remove the concentration limits for oil and grease at Outfall 101. The DEQ QL for O&G is 5 ug/L and there are no WQS for O&G. The rationale provided by the permittee was that the Plastics Molding and Forming guidelines at 40 CFR part 463, Subpart A specify that mass limits must be applied but does not require concentration limits be applied. DEQ accepted this rationale and the monthly average concentration limits for oil and grease were removed.

This same approach will be used in the 2015 Fact Sheet. No concentration limits for O&G are included in the permit.

O&G - Calculation of Adjusted Daily Maximum Limits

O&G from pelletization contact cooling water = (0.001 MGD)(29 mg/L)(3.785) = 0.109765 kg/d

O&G for PVC extrusion contact cooling water = (0.001 MGD)(29 mg/L)(3.785) = 0.109765 kg/d

O&G from ESP washwater = (0.001 MGD)(71 mg/L)(3.785) = 0.268735 kg/d

The federal effluent guidelines for sanitary wastewater do not address O&G; therefore, the sanitary flow is considered to contribute no load when calculating O&G loading limits.

Total O&G load allowed = 0.109765 kg/d + 0.109765 kg/d + 0.268735 kg/d = 0.48826 kg/d, round to 0.49 kg/d

The O&G loading limit of 0.49 kg/d is less stringent than the loading limit in the previous permit. The less stringent O&G limits comply with the antibacksliding provisions of the VPDES Permit Regulation because new effluent flow information is available which would have justified the less stringent limits when the previous limits were established.

$$\text{Adjusted daily maximum concentration limit} = \frac{0.48826 \text{ kg/d}}{(0.019 \text{ MGD})(3.785)} = \frac{0.48826}{0.0719} = 6.7 \text{ mg/L}$$

See rationale provided above for the monthly average O&G concentration limit.

pH

Monitoring for pH at Outfall 101 was not required in previous permits because monitoring for pH was required at Outfall 001. That rationale has been carried forward, and no monitoring for pH has been imposed at Outfall 101.

E. coli

The facility was assigned an E. coli WLA of 3.31 X 10^{10} cfu/year in the South River TMDL. This corresponds to an E. coli limit of 126 N/100 mL at a design flow of 0.019 MGD. The permittee currently uses chlorine disinfection. The permit requires E. coli monitoring 4/Month in any month of each calendar year. If the permittee changes from chlorine disinfection to UV disinfection the E. coli monitoring frequency is 4/Month.

Total Phosphorus

The South River TMDL includes a TP WLA of 65.6 kg/yr for this facility which is applied as a limit in the permit.

EVALUATION OF THE EFFLUENT – NUTRIENTS – Outfall 101:

In accordance with § 62.1-44.19:14.C.5. of the Code of Virginia, TN and TP baselines are being established for this facility to represent nutrient discharge allowances as of July 1, 2005. These baselines will be used as a limiting factor should the facility ever expand to a design flow of 0.040 MGD or greater. For municipal facilities, the baselines are based on the permitted design capacity of the facility. The permitted design capacity is defined as:

Total N or P (lb/yr) = concentration (mg/L) x design flow (MGD) x 8.345 x 365 (days/yr)

where:

Design flow – as of July 1, 2005, the approved flow was 0.019 MGD
Concentration – the treatment provided as of July 1, 2005 was TN = 18.7 mg/L and TP = 2.5 mg/L (assumed concentrations based on secondary treatment facility)

TN = 18.7 mg/l x 0.019 MGD x 8.345 x 365 days/yr = 1,082 lb/yr
TP = 2.5 mg/l x 0.019 MGD x 8.345 x 365 days/yr = 145 lb/yr

The "permitted design capacity" or "permitted capacity" in terms of annual mass load of total nitrogen or total phosphorus discharged by this non-significant discharger is assumed to be that achieved at the current design flow using the currently installed technology. The WWTP serving Outfall 101 treats primarily sewage wastewater so the assumptions for a municipal facility were used based on Best Professional Judgment.

Nonsignificant dischargers are subject to aggregate wasteload allocations for TN, TP, and Sediment under the TMDL for the Chesapeake Bay. In accordance with Guidance Memo No. 14-2011, monitoring of TN and TP is required for this permit term in order to verify the aggregate WLAs.

EVALUATION OF DISCHARGES FROM OUTFALL 002 (stormwater exposed to industrial activity)

Basis for Permit Limits - Outfall 002 **Design Flow: NA**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
TSS	1	NA	NL	1/6 Months	Grab
Total Phosphorus (TP)(mg/L)	1	NA	NL	1/6 Months	Grab
TKN (mg/L)	1	NA	NL	1/6 Months	Grab
Nitrite-N + Nitrate-N (mg/L)	1	NA	NL	1/6 Months	Grab
Total Nitrogen (mg/L)	1	NA	NL	1/6 Months	Calculated

NL = No Limitation, monitoring required *NA = Not Applicable*

Refer to permit for definitions of monitoring frequencies and sample types.
Total Nitrogen, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be derived from the results of those tests.

Bases for Effluent Limitations

1. Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed dated August 8, 2014.

EVALUATION OF DISCHARGES FROM OUTFALL 003 (stormwater not exposed to industrial activity)

Basis for Permit Limits - Outfall 003 **Design Flow: NA**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
There shall be no discharge of process wastewater from this outfall. Also, there shall be no discharge of floating solids or visible foam in other than trace amounts.					

EVALUATION OF DISCHARGES FROM OUTFALL 001

Basis for Permit Limits - Outfall 001 **Maximum Monthly Average Flow: 0.789 MGD ***
Long Term Average Flow: 0.679 MGD *

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow	1	NL	NL	1/Month	Estimate
Total Recoverable Mercury (ng/L)	3	NA	NL	1/6 Months	Composite
---------	----	Minimum	Maximum	-----	-----
pH	2	6.5 SU	9.5 SU	1/Month	Grab
Temperature	2	NA	31 °C	1/Month	IS
Dissolved Oxygen	2	NA	NL	1/Month	Grab

NL = No Limitation, monitoring required *NA = Not Applicable*
IS = Immersion Stabilization
Refer to permit for definitions of monitoring frequencies and sample types.

Bases for Effluent Limitations
1. VPDES Permit Regulation
2. Water Quality Standards (9 VAC 25-260)
3. South River TMDL for mercury

* The maximum monthly average flow at Outfall 001 was used for the toxics evaluation. The long term average flow at outfall 001 was used for the DO modeling evaluation. This approach was used in the previous Fact Sheet and will be carried forward in the 2015 Fact Sheet. The rationale for the approach is that most of the effluent discharged through Outfall 001 is noncontact cooling water and stormwater exposed to industrial activity which is not expected to have an oxygen demand. The internal WWTP serving Outfall 101 (sanitary and process wastewater) has a design flow of 0.019 MGD. The water flow of 0.019 MGD with the oxygen demand is a small portion of the long term average flow of Outfall 001 of 0.679 MGD.

It is noted that the maximum monthly average flow used in the 2010 Fact Sheet was 1.245 MGD. The permittee has implemented water conservation measures over the past 5 years which has reduced the noncontact cooling water flow discharged through Outfall 001.

EVALUATION OF NON-CONTACT COOLING WATER – OUTFALL 001:

Flow discharged from Outfall 001 and Outfall 201 consists of noncontact cooling water and stormwater. The General Permit for Cooling Water Discharges was used as a guide for evaluating the discharges from these two outfalls at this facility and specifies quarterly monitoring for the following parameters:

Flow
Temperature
pH
Ammonia-N[1]
Total Residual Chlorine[2]
Hardness
Total Dissolved Copper
Total Dissolved Zinc
Total Dissolved Silver[3]
Total Phosphorus[4]

(1) Ammonia-N monitoring only applies to outfalls directly discharging to surface waters where the source of cooling water contains chloramines.
(2) Chlorine monitoring only applies to outfalls directly discharging to surface waters where the source of cooling water is chlorinated.
(3) Silver monitoring is only required where Cu/Ag anode is used.
(4) Phosphorus monitoring is only required where additive containing phosphorus is used.

The source of cooling water at this facility is well water. The well source water is not chlorinated. Copper/silver anodes are not used for treatment and no additives containing phosphorus for water treatment are used. Based on this information, monitoring for Ammonia-N, Total Dissolved Silver, and Total Phosphorus is not required.

The remaining parameters are addressed as follows:

Flow
Monthly flow monitoring is carried forward.

Temperature
Monthly monitoring for temperature is carried forward. The effluent temperature shall not exceed a maximum of 31 ºC. In accordance with the General Permit, the following footnote was included in Part I.A.1 of the permit:

> "The effluent shall not cause an increase in temperature of the receiving stream of more than 3 ºC above the natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 ºC per hour. Natural temperature is defined as the temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge."

pH
Monthly monitoring for pH is carried forward. The pH limits reflect the current WQS for pH in the receiving stream.

Total Residual Chlorine
Monthly monitoring for chlorine is required if the source water is chlorinated. The chlorine limits reflect those determined to be necessary as shown in the following section (Evaluation of the Effluent – Toxic Pollutants).

Hardness, Total Dissolved Copper, and Total Dissolved Zinc
The purpose of the monitoring requirements for these parameters in the General Permit was to provide additional effluent data which would be used to evaluate the need for future effluent limits. The existing effluent data for these parameters was utilized in the evaluation of effluent toxic parameters found later in this appendix. Because the evaluation showed that effluent limits were not required for copper or zinc, monitoring for these parameters was not included in the permit.

EVALUATION OF EFFLUENT CONVENTIONAL POLLUTANTS – OUTFALL 001:

The discharge is included in the South River DO model maintained by the DEQ-Valley Regional Office, which is available for review by visitation or electronically upon request.

Sanitary and process wastewaters are treated at the WWTP serving internal Outfall 101. The discharge from Outfall 101 is then combined with noncontact cooling water and discharged to the South River through Outfall 001. The Regional Stream Model was utilized to verify that the expected effluent concentrations at Outfall 001 based on the limits set at internal Outfall 101 for the design flow of 0.019 MGD were protective at a long term average flow of 0.679 MGD at Outfall 001. Because the majority of the effluent at Outfall 001 is contributed by non-contact cooling water, which is not expected to contribute significant oxygen demanding substances, modeling the combined flow at a long term average flow of 0.679 MGD instead of the maximum monthly average flow of 0.789 MGD was considered to be a conservative approach. The noncontact cooling water flow was estimated as follows:

0.679 MGD – 0.019 MGD = 0.66 MGD

Using the Regional Stream Model it was determined that the following values maintained the DO baseline of 7.5 mg/L at the flow of 0.679 MGD.

$CBOD_5$	=	0.811 mg/L
TKN	=	3.56 mg/L
DO	=	7.9 mg/L

The input $CBOD_5$ was calculated as follows:

$$BOD_5 \text{ mix} = \frac{(0.66 \text{ MGD})(0 \text{ mg/L}) + (0.019 \text{ MGD})(29 \text{ mg/L})}{0.679 \text{ MGD}} = 0.811 \text{ mg/L}$$

where the flow contributed to Outfall 001 by sources other than Outfall 101 is 0.66 MGD and is assumed to contribute no BOD_5. As a conservative estimate, the $CBOD_5$ was set equal to the calculated BOD_5.

The input TKN was calculated as follows:

$$\text{TKN mix} = 3.0 \text{ mg/L} + \frac{(0.66 \text{ MGD})(0 \text{ mg/L}) + (0.019 \text{ MGD})(20 \text{ mg/L})}{0.679 \text{ MGD}} = 3.56 \text{ mg/L}$$

where 3.0 mg/L is assumed to be refractory TKN and the flow contributed to Outfall 001 by sources other than Outfall 101 is 0.66 MGD and is assumed to contribute no TKN. Based on data submitted during the reissuance process, the TKN concentration at Outfall 101 was set equal to 20 mg/L as a conservative estimate.

The input DO was calculated as follows:

$$\text{DO mix} = \frac{(0.66 \text{ MGD})(8.08 \text{ mg/L}) + (0.019 \text{ MGD})(0 \text{ mg/L})}{0.679 \text{ MGD}} = 7.9 \text{ mg/L}$$

where the flow contributed to Outfall 001 by sources other than Outfall 101 is 0.66 MGD and was assumed to have a DO concentration of 8.08 mg/L in the previous Fact Sheet. In addition, the Outfall 101 effluent was assumed to have a DO concentration of 0 mg/L. In order to verify the actual DO in Outfall 001, DO monitoring is required at outfall 001.

EVALUATION OF THE EFFLUENT – TOXICS – OUTFALL 001:

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 1BSTH007.80 on South River located at the SR 778 at the Harriston gaging station. A Flow Frequency Determination is included in Appendix B. The wet season is January to May.

Stream Information			
90% Annual Temp (°C) =	23.1	90% pH (SU) =	8.5
90% Wet Temp (Jan-May) (°C) =	16	10% pH (SU) =	7.5
Mean Hardness (mg/L) =	93		

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

Discharge: For the toxics evaluation, the maximum 30 day average flow of 0.789 MGD at Outfall 001 was utilized as a conservative approach. The pH and temperature values were obtained from the monthly Discharge Monitoring Reports (DMRs) submitted by the facility. The hardness value was obtained from the DEQ sampling inspection and was carried forward from the previous Fact Sheet.

Effluent Information			
90% Annual Temp (°C) =	20	90% pH (SU) =	8.4
90% Wet Temp (Jan -May) (°C) =	19	10% pH (SU) =	7.6
Mean Hardness (mg/L) =	150		

In addition, the following effluent data was provided at this reissuance in Form 2C.

Parameters	Values (mg/L)	Parameters	Values (mg/L)
BOD	<2	TSS	<1
COD	<10	Ammonia-N	<0.10
TOC	<1.0	Oil & Grease	<5

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. Current agency guidelines recommend the evaluation of toxic pollutant limits for TRC be based on default effluent concentrations of 20 mg/L if it is potentially present. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

a. **Ammonia-N:** No limits were determined to be necessary for Ammonia-N.

b. **Total Residual Chlorine:** No limits were determined to be necessary for TRC. The effluent TRC concentration at Outfall 001 utilized in STAT.exe was determined as follows:

$$\text{TRC mix} = \frac{(0.66\ \text{MGD})(0\ \text{mg/L}) + (0.019\ \text{MGD})(4.0\ \text{mg/L})}{0.679\ \text{MGD}} = 0.11\ \text{mg/L}$$

where the flow contributed to Outfall 001 by sources other than Outfall 101 is 0.66 MGD and is assumed to contribute no TRC. In addition, the daily maximum TRC concentration at Outfall 101 is considered to be 4.0 mg/L based on the permit limit imposed at that outfall.

EVALUATION OF OTHER WATERS DISCHARGED THROUGH OUTFALL 001

Other waters discharged through Outfall 001 without receiving treatment include: boiler blowdown, boiler house condensate, softening/RO system water, compressed air system waste condensate and sprinkler firewater.

Boiler Blowdown
The permittee has indicated that the boiler blowdown characteristics are anticipated to be equivalent to comparative industrial boilers, and contain trace minerals and boiler treatment chemicals from boiler feedwater and scale. The boiler blowdown represents less than 0.05% of the total effluent flow and is considered to have minimal effect on the final effluent discharged from Outfall 001. Further characterization or monitoring of the boiler blowdown is not required at this time.

Boiler House Condensate
The permittee has indicated that other than boiler treatment chemicals, no contaminants are expected to be in the boiler house condensate. The condensate represents approximately 0.7% of the total effluent flow and is considered to have minimal effect on the final effluent discharged from Outfall 001. Further characterization or monitoring of the boiler house condensate is not required at this time.

Softening/RO System Water
The permittee has indicated that the softening/RO system water will contain removed turbidity and metals from the raw feed water. Metal electrolyte concentrations in the RO discharge are anticipated to be 3-4 times the raw water concentrations. The softening/RO system water represents approximately 0.5% of the total effluent flow and is considered to have minimal effect on the final effluent discharged from Outfall 001. Further characterization or monitoring of the softening/RO system water is not required at this time.

Compressed Air System Waste Condensate
The permittee has indicated that the compressed air system waste condensate may contain trace compressor oils. The condensate water represents approximately 0.05% of the total effluent flow and is considered to have minimal effect on the final effluent discharged from Outfall 001. Further characterization or monitoring of the compressed air system waste condensate is not required at this time.

Sprinkler Firewater
The flow from the sprinkler firewater is intermittent and is not expected to have any effect on the final effluent discharged from Outfall 001. Further characterization or monitoring of the sprinkler firewater is not required at this time.

Other waters discharged through Outfall 001 that receive treatment other than the wastewater treatment facility discharging via internal Outfall 101 include: vacuum pump liquid seal ring water.

Vacuum Pump Liquid Seal Ring Water
The permittee has indicated that the vacuum pump liquid seal ring water should routinely be free of contaminants. Past contamination of this water has included polyvinyl chloride resin blend powder. This water is treated using 10 micron cartridge filters; however, the polyvinyl chloride resin blend powder has bypassed the filters in the past. This water represents approximately 7% of the total effluent flow. The resin blend powder is inert and acts as an aesthetic pollutant. Discharge of polyvinyl chloride resin blend powder is not authorized by the permit.

EVALUATION OF TOTAL RECOVERABLE MERCURY – OUTFALL 001:

Following is a chronology of the mercury TMDL:

1. The mercury TMDL for the South River was approved by EPA on June 3, 2010.

2. Mercury WLAs were specified for the following five VPDES Permits:

   Invista – VPDES Permit No. VA0002160
   Pactiv, LLC – VPDES Permit No. VA0001767
   Former Genicom – VPDES Permit No. VA0002402
   Stuarts Draft WWTP – VPDES Permit No. VA0066877
   Waynesboro WWTP – VPDES Permit No. VA0025151

3. The Pactiv, LLC permit was reissued on May 1, 2011 and was the first VPDES permit to incorporate the mercury TMDL requirements. Since 2011, the remaining four VPDES permits were reissued and incorporated the mercury TMDL requirements.

4. Pactiv, LLC submitted a Mercury Minimization Plan on November 18, 2011 in accordance with Part I.F of the permit. The plan specified the following actions:

   - Semi-annual monitoring of Outfall 001
   - Semi-annual monitoring of Wells No. 4 and 5 to evaluate background mercury levels. Wells No. 4 and 5 are process water wells in use at the Grottoes facility.
   - Waste management of any mercury containing waste will continue including fluorescent lights, mercury switches, and electric components via the plant's universal waste program.
   - Mercury Thermometer Ban – Mercury containing thermometers will no longer be purchased for use at the plant. Any existing mercury thermometers will be phased out by the end of 2012.

5. Table 1 is a summary of the mercury monitoring conducted during the term of the permit.

6. The maximum 30-day average flow discharged from Outfall 001 in the 2010 Fact Sheet was 1.245 MGD. The maximum 30-day average flow discharged from Outfall 001 in 2015 Fact Sheet is 0.789 MGD. The permittee has incorporated water conservation measures into the plant during the past 5 years.

Discussion:

The mercury TMDL developed for this facility was originally based on an Outfall 001 flow of 3.2 MGD. Outfall 001contains a combined discharge flow of stormwater exposed to industrial activity, discharge from the WWTP serving internal Outfall 101, and noncontact cooling water. The maximum 30 day average flow used for permit calculations in the 2011 Fact Sheet was 1.245 MGD. The maximum 30 day average flow used for permit calculation in the 2015 Fact Sheet is 0.789 MGD. The Outfall 001 flow has decreased significantly over the past 10 years.

Although the concentration results for Outfall 001 exceed the target concentration of 3.8 ng/L, the average daily loading was calculated to be 0.044 g/d and the maximum daily loading was calculated to be 0.088 g/d. Both of these values are below the TMDL WLAs, so although the target level of 3.8 ng/L is exceeded, the actual mass WLAs are met because flows have decreased significantly. Because the TMDL WLAs are not being exceeded, the permit requires continued mercury monitoring at a frequency of 2/Year.

Table 1

Summary of Low Level Mercury Analyses

Sample Date	Mercury, ng/L			
	Well No. 4	Well No. 5	Potable Water Supply	Outfall 001
June 17, 2011	no data	40.5	no sample	29.5
July 1, 2011	no data	34.9	no sample	26.3
June 22, 2012	10.3	28.0	no sample	20.8
December 7, 2012	0.2	13.3	0.8	19.1
June 14, 2013	5.16	3.31	0.5	3.9
December 20, 2013	4.01	27.8	no sample	16.8
June 27, 2014	14.8	22.7	no sample	20.4
January 23, 2015	11.9	20.5	no sample	11.5
June 25, 2015	8.0	11.3	no sample	6.64
December 2015 (sampling planned)				

Notes (from Mercury Minimization Plan):

Well No. 4 Drilled to depth of 315 feet; cased to 185 ft. (October 1959)

Well No. 5: Drilled to dept of 342 feet; cased to 251 feet (March, 1962) bedrock at 230 feet

WQC-WLA SPREADSHEET INPUT

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: Pactiv, LLC - Outfall 001
Receiving Stream: South River
Permit No.: VA0001767
Date: 9/1/2015
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information			Effluent Information	
Mean Hardness (as CaCO3) =	93 mg/L	1Q10 (Annual) =	28.8 MGD	Annual	- 1Q10 Flow =	100 %	Mean Hardness (as CaCO3) =	150 mg/L
90% Temperature (Annual) =	23.1 deg C	7Q10 (Annual) =	32.7 MGD		- 7Q10 Flow =	100 %	90% Temp (Annual) =	20 deg C
90% Temperature (Wet season) =	16 deg C	30Q10 (Annual) =	35.4 MGD		- 30Q10 Flow =	100 %	90% Temp (Wet season) =	19 deg C
90% Maximum pH =	8.5 SU	1Q10 (Wet season) =	41.4 MGD	Wet Season	- 1Q10 Flow =	100 %	90% Maximum pH =	8.4 SU
10% Maximum pH =	7.5 SU	30Q10 (Wet season) =	57.7 MGD		- 30Q10 Flow =	100 %	10% Maximum pH =	7.6 SU
Tier Designation =	2	30Q5 =	39.5 MGD				1992 Discharge Flow =	0.78900 MGD
Public Water Supply (PWS) Y/N?	N	Harmonic Mean =	87.6 MGD				Discharge Flow for Limit Analysis	0.78900 MGD
V(alley) or P(iedmont)? =	V							
Trout Present Y/N? =	N							
Early Life Stages Present Y/N? =	Y							

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT

Facility Name: Pactiv, LLC - Outfall 001
Receiving Stream: South River
Permit No.: VA0001767
Date: 9/1/2015

WATER QUALITY CRITERIA
0.789 MGD Discharge Flow - Mix per "Mixer"

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS
0.789 MGD Discharge - Mix per "Mixer"

Toxic Parameter and Form	Carcinogen?	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health Public Water Supplies	Human Health Other Surface Waters	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health
Antimony	N	None	None	5.6E+00	6.4E+02	N/A	N/A	3.3E+04
Arsenic	N	3.4E+02	1.5E+02	1.0E+01	None	1.3E+04	6.4E+03	N/A
Cadmium	N	3.7E+00	1.1E+00	5.0E+00	None	1.4E+02	4.6E+01	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	7.1E-01 mg/L	4.7E-01 mg/L	N/A
Chromium (+3)	N	5.4E+02	7.1E+01	None	None	2.0E+04	3.0E+03	N/A
Chromium (+6)	N	1.6E+01	1.1E+01	None	None	6.0E+02	4.7E+02	N/A
Copper	N	1.3E+01	8.5E+00	1.3E+03	None	4.8E+02	3.6E+02	N/A
Cyanide, Free	N	2.2E+01	5.2E+00	1.4E+02	1.6E+04	8.3E+02	2.2E+02	8.2E+05
Lead	N	1.1E+02	1.3E+01	1.5E+01	None	4.2E+03	5.3E+02	N/A
Nickel	N	1.7E+02	1.9E+01	6.1E+02	4.6E+03	6.5E+03	8.2E+02	2.3E+05
Selenium, Total Recoverable	N	2.0E+01	5.0E+00	1.7E+02	4.2E+03	7.5E+02	2.1E+02	2.1E+05
Silver	N	3.1E+00	None	None	None	1.2E+02	N/A	N/A
Zinc	N	1.1E+02	1.1E+02	7.4E+03	2.6E+04	4.2E+03	4.8E+03	1.3E+06

PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS – OUTFALL 001

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

Since there are no data available for any toxic pollutants immediately upstream of this discharge, all upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is ≤ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.

   B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.

   B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.

C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.

   C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.

   C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.

   C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	<200 (total)	a	B.1
Arsenic, dissolved	7440-38-2	1.0	<200 (total)	a	B.1
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	<20 (total)	a	B.1
Chromium III, dissolved	16065-83-1	0.5	<100 (total)	a	B.1
Chromium VI, dissolved	18540-29-9	0.5	<100 (total)	a	B.1
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	<100 (total)	a	B.1
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	<200 (total)	a	B.1
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	<1	a	A
Nickel, dissolved	7440-02-0	0.5	<100 (total)	a	B.1
Selenium, total recoverable	7782-49-2	2.0	<200, <5 (total)	a,b	B.1
Silver, dissolved	7440-22-4	0.2	<50 (total), <5 (total)	a,b	B.1
Thallium, dissolved	7440-28-0	---	<200 (total)	a	A
Zinc, dissolved	7440-66-6	2.0	<50 (total)	a	B.1
PESTICIDES/PCBS					
Aldrin [C]	309-00-2	0.05	Previously evaluated, no further monitoring required	---	---
Chlordane [C]	57-74-9	0.2	Previously evaluated, no further monitoring required	---	---
Chlorpyrifos	2921-88-2	---	Previously evaluated, no further monitoring required	---	---
DDD [C]	72-54-8	0.1	No data. Monitoring not required	---	---
DDE [C]	72-55-9	0.1	No data. Monitoring not required	---	---
DDT [C]	50-29-3	0.1	No data. Monitoring not required	---	---
Demeton	8065-48-3	---	Previously evaluated, no further monitoring required	---	---
Diazinon	333-41-5	---	No data. Monitoring not required	---	---
Dieldrin [C]	60-57-1	0.1	Previously evaluated, no further monitoring required	---	---
Alpha-Endosulfan	959-98-8	0.1	Previously evaluated, no further monitoring required	---	---
Beta-Endosulfan	33213-65-9	0.1	Previously evaluated, no further monitoring required	---	---
Alpha-Endosulfan + Beta-Endosulfan		---	Previously evaluated, no further monitoring required	---	---
Endosulfan Sulfate	1031-07-8	0.1	Previously evaluated, no further monitoring required	---	---
Endrin	72-20-8	0.1	Previously evaluated, no further monitoring required	---	---
Endrin Aldehyde	7421-93-4	---	Previously evaluated, no further monitoring required	---	---
Guthion	86-50-0	---	Previously evaluated, no further monitoring required	---	---
Heptachlor [C]	76-44-8	0.05	Previously evaluated, no further monitoring required	---	---
Heptachlor Epoxide [C]	1024-57-3	---	No data. Monitoring not required	---	---
Hexachlorocyclohexane Alpha-BHC [C]	319-84-6	---	No data. Monitoring not required	---	---
Hexachlorocyclohexane Beta-BHC [C]	319-85-7	---	No data. Monitoring not required	---	---
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	Previously evaluated, no further monitoring required	---	---
Kepone	143-50-0	---	Previously evaluated, no further monitoring required	---	---
Malathion	121-75-5	---	Previously evaluated, no further monitoring required	---	---
Methoxychlor	72-43-5	---	Previously evaluated, no further monitoring required	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Mirex	2385-85-5	---	Previously evaluated, no further monitoring required	---	---
Parathion	56-38-2	---	Previously evaluated, no further monitoring required	---	---
PCB Total [C]	1336-36-3	7.0	Previously evaluated, no further monitoring required	---	---
Toxaphene [C]	8001-35-2	5.0	Previously evaluated, no further monitoring required	---	----
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	Previously evaluated, no further monitoring required	---	---
Anthracene	120-12-7	10.0	Previously evaluated, no further monitoring required	---	---
Benzidine [C]	92-87-5	---	Previously evaluated, no further monitoring required	---	---
Benzo (a) anthracene [C]	56-55-3	10.0	Previously evaluated, no further monitoring required	---	---
Benzo (b) fluoranthene [C]	205-99-2	10.0	Previously evaluated, no further monitoring required	--	---
Benzo (k) fluoranthene [C]	207-08-9	10.0	Previously evaluated, no further monitoring required	---	---
Benzo (a) pyrene [C]	50-32-8	10.0	Previously evaluated, no further monitoring required	---	---
Bis 2-Chloroethyl Ether [C]	111-44-4	---	Previously evaluated, no further monitoring required	---	---
Bis 2-Chloroisopropyl Ether	108-60-1	---	No data. Monitoring not required	---	---
Bis-2-Ethylhexyl Phthalate [C]	117-81-7	10.0	No data. Monitoring not required	---	---
Butyl benzyl phthalate	85-68-7	10.0	Previously evaluated, no further monitoring required	---	---
2-Chloronaphthalene	91-58-7	---	Previously evaluated, no further monitoring required	---	---
Chrysene [C]	218-01-9	10.0	Previously evaluated, no further monitoring required	---	---
Dibenz(a,h)anthracene [C]	53-70-3	20.0	Previously evaluated, no further monitoring required	---	---
1,2-Dichlorobenzene	95-50-1	10.0	Previously evaluated, no further monitoring required	---	---
1,3-Dichlorobenzene	541-73-1	10.0	Previously evaluated, no further monitoring required	---	---
1,4-Dichlorobenzene	106-46-7	10.0	Previously evaluated, no further monitoring required	---	---
3,3-Dichlorobenzidine [C]	91-94-1	---	Previously evaluated, no further monitoring required	---	---
Diethyl phthalate	84-66-2	10.0	Previously evaluated, no further monitoring required	---	---
Dimethyl phthalate	131-11-3	---	Previously evaluated, no further monitoring required	---	---
Di-n-Butyl Phthalate	84-74-2	10.0	No data. Monitoring not required	---	---
2,4-Dinitrotoluene	121-14-2	10.0	Previously evaluated, no further monitoring required	---	---
1,2-Diphenylhydrazine [C]	122-66-7	---	Previously evaluated, no further monitoring required	---	---
Fluoranthene	206-44-0	10.0	Previously evaluated, no further monitoring required	---	---
Fluorene	86-73-7	10.0	Previously evaluated, no further monitoring required	---	---
Hexachlorobenzene [C]	118-74-1	---	Previously evaluated, no further monitoring required	---	---
Hexachlorobutadiene [C]	87-68-3	---	Previously evaluated, no further monitoring required	---	---
Hexachlorocyclopentadiene	77-47-4	---	Previously evaluated, no further monitoring required	---	---
Hexachloroethane [C]	67-72-1	---	Previously evaluated, no further monitoring required	---	---
Indeno(1,2,3-cd)pyrene [C]	193-39-5	20.0	Previously evaluated, no further monitoring required	---	---
Isophorone [C]	78-59-1	10.0	Previously evaluated, no further monitoring required	---	---
Nitrobenzene	98-95-3	10.0	Previously evaluated, no further monitoring required	---	---
N-Nitrosodimethylamine [C]	62-75-9	---	No data. Monitoring not required	---	---
N-Nitrosodi-n-propylamine [C]	621-64-7	---	Previously evaluated, no further monitoring required	---	---
N-Nitrosodiphenylamine [C]	86-30-6	---	Previously evaluated, no further monitoring required	---	---
Pyrene	129-00-0	10.0	Previously evaluated, no further monitoring required	---	---
1,2,4-Trichlorobenzene	120-82-1	10.0	Previously evaluated, no further monitoring required	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
VOLATILES					
Acrolein	107-02-8	---	<10	a	A
Acrylonitrile [C]	107-13-1	---	<10	a	A
Benzene [C]	71-43-2	10.0	<1	a	A
Bromoform [C]	75-25-2	10.0	<1	a	A
Carbon Tetrachloride [C]	56-23-5	10.0	<1	a	A
Chlorobenzene	108-90-7	50.0	<1	a	A
Chlorodibromomethane [C]	124-48-1	10.0	<1	a	A
Chloroform	67-66-3	10.0	<1	a	A
Dichlorobromomethane [C]	75-27-4	10.0	<1	a	A
1,2-Dichloroethane [C]	107-06-2	10.0	<1	a	A
1,1-Dichloroethylene	75-35-4	10.0	<1	a	A
1,2-trans-dichloroethylene	156-60-5	---	<1	a	A
1,2-Dichloropropane [C]	78-87-5	---	<1	a	A
1,3-Dichloropropene [C]	542-75-6	---	<1	a	A
Ethylbenzene	100-41-4	10.0	<1	a	A
Methyl Bromide	74-83-9	---	<1	a	A
Methylene Chloride [C]	75-09-2	20.0	<1	a	A
1,1,2,2-Tetrachloroethane [C]	79-34-5	---	<1	a	A
Tetrachloroethylene	127-18-4	10.0	<1	a	A
Toluene	10-88-3	10.0	<1	a	A
1,1,2-Trichloroethane [C]	79-00-5	---	<1	a	A
Trichloroethylene [C]	79-01-6	10.0	<1	a	A
Vinyl Chloride [C]	75-01-4	10.0	<1	a	A
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dichlorophenol	120-83-2	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dimethylphenol	105-67-9	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dinitrophenol	51-28-5	---	Previously evaluated, no further monitoring required	---	---
2-Methyl-4,6-Dinitrophenol	534-52-1	---	Previously evaluated, no further monitoring required	---	---
Nonylphenol	104-40-51	---	No data. Monitoring not required	---	---
Pentachlorophenol [C]	87-86-5	50.0	Previously evaluated, no further monitoring required	---	---
Phenol	108-95-2	10.0	<10	a	A
2,4,6-Trichlorophenol [C]	88-06-2	10.0	Previously evaluated, no further monitoring required	---	---
MISCELLANEOUS					
Ammonia-N (mg/L) (Annual) (June-Dec)	766-41-7	0.2 mg/L	<0.1	**a**	C.1
Ammonia-N (mg/L) (Wet Season) (Jan-May)	766-41-7	0.2 mg/L	<0.1	**a**	C.1

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Chloride (mg/L)	16887-00-6	---	Previously evaluated, no further monitoring required	---	---
TRC (mg/L)	7782-50-5	0.1 mg/L	Calculated Mix = 0.11 mg/L	**a**	C.1
Cyanide, Free	57-12-5	10.0	<20 (total)	a	C.1
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)(ppq)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Sulfide, dissolved	18496-25-8	100	No data. Monitoring not required	---	---
Hydrogen Sulfide	7783064	---	No data. Monitoring not required	---	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	No data. Monitoring not required	---	---
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Hardness (mg/L as $CaCO_3$)	471-34-1	---	No data. Monitoring not required	---	---

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10^{-5}.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:
a = Form 2c application dated 06.26.15
b. Form 2c application dated 06.18.10

"Data Evaluation" codes:
See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

STAT.EXE RESULTS – OUTFALL 001:

Arsenic:

Chronic averaging period = 4
WLAa = 13000
WLAc = 6400
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 200

Cyanide:

Chronic averaging period = 4
WLAa = 830
WLAc = 220
Q.L. = 10
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 20

Trivalent Chromium:

Chronic averaging period = 4
WLAa = 20000
WLAc = 3000
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 100
Variance = 3600
C.V. = 0.6
97th percentile daily values = 243.341
97th percentile 4 day average = 166.379
97th percentile 30 day average= 120.605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 100

Hexavalent Chromium:

Chronic averaging period = 4
WLAa = 600
WLAc = 470
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 100
Variance = 3600
C.V. = 0.6
97th percentile daily values = 243.341
97th percentile 4 day average = 166.379
97th percentile 30 day average= 120.605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 100

STAT.EXE RESULTS – OUTFALL 001:

Copper:

Chronic averaging period = 4
WLAa = 480
WLAc = 360
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 100
Variance = 3600
C.V. = 0.6
97th percentile daily values = 243.341
97th percentile 4 day average = 166.379
97th percentile 30 day average= 120.605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 100

Lead:

Chemical = lead
Chronic averaging period = 4
WLAa = 4200
WLAc = 530
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 200

Nickel:

Chronic averaging period = 4
WLAa = 6500
WLAc = 820
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 100
Variance = 3600
C.V. = 0.6
97th percentile daily values = 243.341
97th percentile 4 day average = 166.379
97th percentile 30 day average= 120.605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 100

Selenium:

Chronic averaging period = 4
WLAa = 750
WLAc = 210
Q.L. = 2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = 102.5
Variance = 3782.25
C.V. = 0.6
97th percentile daily values = 249.425
97th percentile 4 day average = 170.538
97th percentile 30 day average= 123.620
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 200, 5

STAT.EXE RESULTS – OUTFALL 001:

Silver: Chronic averaging period = 4 WLAa = 120 WLAc = Q.L. = .2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 2 Expected Value = 27.5 Variance = 272.25 C.V. = 0.6 97th percentile daily values = 66.9189 97th percentile 4 day average = 45.7542 97th percentile 30 day average= 33.1664 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 50, 5	**Total Residual Chlorine**: Chronic averaging period = 4 WLAa = 0.71 WLAc = 0.47 Q.L. = 0.1 # samples/mo. = 30 # samples/wk. = 7 Summary of Statistics: # observations = 1 Expected Value = .11 Variance = .004356 C.V. = 0.6 97th percentile daily values = .267675 97th percentile 4 day average = .183016 97th percentile 30 day average= .132665 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 0.11
Zinc: Chronic averaging period = 4 WLAa = 4200 WLAc = 4800 Q.L. = 2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 50 Variance = 900 C.V. = 0.6 97th percentile daily values = 121.670 97th percentile 4 day average = 83.1895 97th percentile 30 day average= 60.3026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 50	Cadmium: Chronic averaging period = 4 WLAa = 140 WLAc = 46 Q.L. = 0.3 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 20

APPENDIX D

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page	• Content and format as prescribed by the VPDES Permit Manual.
Part I.A.1	**Effluent Limitations and Monitoring Requirements – Outfall 001 (combined discharge of Outfall 101, noncontact cooling water and stormwater):** Bases for effluent limits are provided in previous pages of this fact sheet. Monitoring requirements are as prescribed by Guidance Memo No. 14-2003. *Updates Part I.A.1 of the previous permit with the following:* • Minor wording changes were made in the description of Outfall 001. • Added Total Recoverable Mercury monitoring per Mercury Minimization Plan.
Part I.A.2	**Effluent Limitations and Monitoring Requirements – Outfall 101 (final discharge from internal WWTP for sanitary and process wastewater)** *Updates Part I.A.2 of the previous permit with the following:* • Maximum BOD_5 concentration limit changed from 45 mg/L to 43 mg/L. • Maximum BOD_5 mass limit changed from 3.2 kg/d to 3.1 kg/d. • Maximum TSS loading limit changed from 3.6 kg/d to 3.3 kg/d. • E. coli sampling frequency changed from 4/Month to 4/Month in any month of each calendar year. • Monitoring added for TN, TP, TKN, and Nitrite-N + Nitrate-N. • Footnote added that TN, which is the sum of TKN and Nitrite-N + Nitrate-N, shall be derived from the results of those tests. • The definition of 1/Year sampling frequency was updated.
Part I.A.3	**Effluent Limitations and Monitoring Requirements – Outfall 002 (stormwater exposed to industrial activity)** *Updates Part I.A.3 of the previous permit to include only Outfall 002.* Monitoring added 1/6 Months for TSS, TKN, Nitrite-N + Nitrate-N, TN and TP. Refer to Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed dated August 8, 2014.
Part I.A.4	**Effluent Limitations and Monitoring Requirements – Outfall 003 (stormwater not exposed to industrial activity)** *Updates Part I.A.3 of the previous permit to include only Outfall 003.* Reference to Outfall 002 was removed.
Part I.B	**Additional Total Residual Chlorine (TRC) and E. coli Effluent Limitations and Monitoring Requirements (Outfall 101):** *Updates Part I.C. of the previous permit with minor wording changes.* If chlorine disinfection is not used, the E. coli monitoring frequency is 4/Month. Required by Sewage Collection and Treatment (SCAT) Regulations, 9VAC25-790 and Water Quality Standards, 9VAC25-260-170, Bacteria; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

Part I.C	**Effluent Limitations and Monitoring Requirements – Additional Instructions***: Updates Part I.D. of the previous permit with minor wording changes. Also, the QL for BOD_5 was changed from 5 mg/L to 2 mg/L*. Paragraph added regarding nutrient reporting. Authorized by VPDES Permit Regulation 9 VAC25-31-190 J.4. and 220.I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.
Part I.D	**Mercury Monitoring Requirements:** *Updates Part I.F of the previous permit with minor wording changes.* VPDES Permit Regulation 9VAC25-31-220.K requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.
Part I.E.1	**95% Capacity Reopener (Outfall 101):** *Updates Part I.E.1 of the previous permit with minor wording changes.* Required by VPDES Permit Regulation 9VAC25-31-200.B.4 for certain permits. Included for this facility to ensure that adequate treatment capacity will continue to be provided as influent flows and/or loadings increase.
Part I.E.2	**Materials Handling/Storage:** *Updates Part I.E.2 of the previous permit with minor wording changes.* 9VAC25-31-50.A prohibits the discharge of any waste into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.
Part I.E.3	**O&M Manual Requirement:** *Updates Part I.E.3 of the previous permit with changes to what is required to be included in the O&M Manual.* Code of Virginia Section 62.1-44.16, VPDES Permit Regulation 9VAC25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an O&M manual ensures this.
Part I.E.4	**CTC/CTO Requirement (Outfall 101):** *Identical to Part I.E.6 of the previous permit.* Required by Code of Virginia 62.1-44.19, Sewage Collection and Treatment (SCAT) Regulations 9VAC25-790, and VPDES Permit Regulation 9VAC25-31-190.E for all STPs 9VAC25-40-70.A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
Part I.E.5	**Sludge Management Plan (SMP) Requirement (Outfall 101):** *Identical to Part I.E.4 of the previous permit.* VPDES Permit Regulation 9VAC25-31-100.P, 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9VAC25-32-10 *et seq.*) Applied to this industrial permit per BPJ.
Part I.E.6	**Reliability Class (Outfall 101):** *Identical to Part I.E.5 of the previous permit.* Required by Sewage Collection and Treatment (SCAT) Regulations 9VAC25-790 for all municipal facilities. Class II status recommended by VDH for this facility on June 28, 1996.

Part I.E.7	**Treatment Works Closure Plan**: *Updates Part I.E.7 of the previous permit with minor wording changes*. This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure industrial sites and treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law.
Part I.E.8	**Reopeners:** a. *New Requirement:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act. b. *Updates Part I.E.8.b of the previous permit with minor wording changes:* 9VAC25-40-70.A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. c. *Identical to Part I.E.8.c of the previous permit:* Sludge Reopener. Required by the VPDES Permit Regulation 9VAC25-31-220.C, for all permits issued to treatment works treating domestic sewage.
Part I.E.9	**Notification Levels:** *Identical to Part I.E.9 of the previous permit.* Required by the VPDES Permit Regulation 9VAC25-31-200.A for all manufacturing, commercial, mining, and silvicultural dischargers.
Part I.E.10	**Cooling Water and Boiler Additives:** *New requirement.* Based on 9VAC 5-196-70 for discharge of Noncontact Cooling Water when chemical additives are proposed for which the need for limits have not been evaluated.
Part I.E.11	**Nutrient and Sediment Monitoring Requirments for Discharges of Industrial Stormwater – Outfall 002.** *New requirement.* Nonsignificant dischargers are subject to aggregate wasteload allocations for TN, TP, and sediments under the TMDL for the Chesapeake Bay. Monitoring of TN and TP is required in order to verify the aggregate WLAs. Refer to Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.
Part I.E.12	**Expansion of facilities that discharge to waters subject to the Chesapeake Bay TMDL –** *New requirement.* Refer to Guidance Memo No. 14-2011, Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.
Part I.F.1	**General Stormwater Special Conditions**: *Updates Part I.G.1 of the previous permit.* VPDES Permit Regulation 9VAC25-31-10 defines discharges of stormwater from industrial activity in 9 industrial categories. 9VAC25-31-120 requires a permit for these discharges. The Stormwater Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of stormwater associated with industrial activity, 9VAC25-151-10 et seq. VPDES Permit Regulation 9VAC25-31-220.K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are

	necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.
Part I.F.2	**Stormwater Pollution Prevention Plan**: *Updates Part I.G.2 of the previous permit*. See rationale listed above for the General Stormwater Special Conditions.
Part I.F.3	**Sector-Specific Stormwater Pollution Prevention Plan Requirements**: *Updates Part I.G.3 of the previous permit*. See rationale listed above for the General Stormwater Special Conditions.
Part II	**Conditions applicable to all VPDES Permits:** *Updates Part II of the previous permit.* VPDES Permit Regulation 9VAC25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

Deletions:

Part I.B	Interim Limits and Schedule of Compliance for TP – was deleted since permittee is in compliance with final limits.
Part I.E.8.a	The reopener to incorporate technology-based effluent concentration limitations for nutrients in conjunction with the installation of nutrient control technology was removed. Outfall 101 has a permitted design capacity of TN = 1,082 lb/yr and TP = 145 lb/yr. The permit does not authorize any expansion to 0.040 MGD or more (or an equivalent industrial load); therefore, the reopener language is not required.